|INCH-POUND|

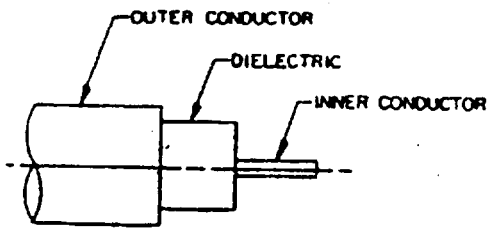
MIL-C-17/133D
17 January 1992
SUPERSEDING
MIL-C-17/133C
23 February 1988

MILITARY SPECIFICATION SHEET

CABLES, RADIO FREQUENCY, COAXIAL, 0.0865 (2.20 mm) DIAMETER, SEMIRIGID, 50 OHMS

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and the issue of the following specification listed in that issue of the Department of Defense Index of Specifications and Standards (DODISS) specified in the solicitation: MIL-C-17.



Inches	mm
.0003	0.008
.0005	0.013
.001	0.03
.002	0.05
.0201	0.511
.066	1.68
.086	2.18
.0865	2.197

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.

FIGURE 1. Configuration.

TABLE I. Description.

Part number	Inner conductor	Dielectric core	Outer 1/ conductor	Weight, per 1,000 feet (maximum)
M17/133-RG405	Solid, silver-coated, copper-clad steel .0201 ±.0005 inch	Type F-1 diameter .066 ±.002 inch	Copper tubing, 2/ diameter .0865 ±.001 inch	15.3
M17/133-00001	Same as above	Same as above	Copper tubing 2/ 3/ tin-plated in accordance with MIL-T-10727, type I, .0003 minimum inch thick, diameter .0865 +.002 inch, -.001 inch	15.8
M17/133-00002	Solid, silver-coated, copper wire, diameter .0201 ±.0005 inch	Same as above	Copper tubing 2/ diameter .0865 ±.001 inch	15.2

See footnotes at end of table.

TABLE I. Description - Continued.

Part number	Inner conductor	Dielectric core	Outer 1/ conductor	Weight, per 1,000 feet (maximum)
M17/133-00003	Same as above	Same as above	Copper tubing 2/ 3/ tin-plated in accordance with MIL-T-10727, type I, .0003 minimum inch thick, diameter .0865 +.002 inch, -.001 inch	15.7
M17/133-00004	.0201 ±.0005 inch, diameter 4/	Same as above	Copper tubing 2/ diameter, .086, ±.001 inch	15.4
M17/133-00005	.0201 ±.0005 inch, diameter 4/	Same as above	Copper tubing 2/ 3/ diameter, .086 inch +.002, -.001, tin-plated in accordance with MIL-T-10727, type I, .0003 minimum inch thick	15.9
M17/133-00006 5/ 6/	Solid, silver-coated, copper-clad steel .0201 ±.0005 inch	Type F-1 diameter .066 ±.002 inch	Copper tubing diameter .0865 ±.001 inch	15.3
M17/133-00007 5/ 6/	Same as above	Same as above	Copper tubing tin- 3/ plated in accordance with MIL-T-10727, type I, .0003 minimum inch thick, diameter .0865 +.002 inch, -.001 inch	15.8
M17/133-00008 5/ 6/	Solid, silver-coated, copper wire diameter .0201 ±.0005 inch	Same as above	Copper tubing diameter .0865 ± .001 inch	15.2
M17/133-00009 5/ 6/	Same as above	Same as above	Copper tubing tin- 3/ plated in accordance with MIL-T-10727, type I, .0003 minimum inch thick, diameter .0865 +.002 inch, -.001 inch	15.7

See footnotes at end of table.

TABLE I. Description - Continued.

Part number	Inner conductor	Dielectric core	Outer 1/ conductor	Weight, per 1,000 feet (maximum)
M17/133-00010 5/ 6/	.0201 ±.0005 inch diameter 4/	Same as above	Copper tubing, diameter .086 ±.001 inch	15.4
M17/133-00011 2/ 3/	.0201 ±.0005 inch diameter 4/	Same as above	Copper tubing, 3/ diameter, .086 +.002 inch, -.001 inch, tin plated in accordance with MIL-T-10727, type I, .0003 minimum inch thick	15.9

1/ Welded outer conductor in accordance with ASTM-B-447 and MIL-C-17 is optional.
2/ Hard outer conductor required.
3/ The outer diameter dimension is after plating.
4/ Nickel-coated, copper-clad steel wire, conforming to ANSI/ASTM B-559, class N 40 HS two percent with uniform and continuous silver coating, 40 microinches minimum thick. Wire shall be drawn to final size after plating.
5/ Tensile strength (outer conductor): 35,000 per inch^2-pounds maximum, 40 percent elongation minimum measured over two inches.
6/ These part numbers are for soft outer conductor cables only.

ENGINEERING INFORMATION:

Continuous working voltage: 1,500 V rms, maximum.

Operating frequency: 20 GHz, maximum.

Velocity of propagation: 69.5 percent, nominal.

Power rating: See figure 2.

Operating temperature range: -40°C to +125°C.

Inner conductor properties:

DC resistance (maximum at 20°C): 2.57 ohms per 100 feet for class A wire.
6.57 ohms per 100 feet for class HS wire.

Elongation: 15 percent minimum for class 40 A wire.
1.0 percent minimum for class 40 HS wire.

Tensile strength: 90,000 Klb/in^2 minimum for class 40 HS wire.

Tensile strength (outer-conductor): 35,000 per inch^2-pounds maximum, 40 percent elongation minimum measured over two inches (not applicable to RG405 through 00005) in accordance with ASTM E8.

Engineering notes: This cable is useful in critical RF performance applications (see connector series SMA in accordance with MIL-C-39012). This cable is generally manufactured in 20-foot lengths. Different lengths are available.

REQUIREMENTS:

Dimensions, configuration, and descriptions: See figure 1 and table I.

Environmental and mechanical:

Eccentricity: 8.5 percent, maximum.

Adhesion of conductors:

Inner conductor to core: 4 pounds minimum, 25 pounds maximum.

Outer conductor to core: 4 pounds minimum.

Aging stability: Not applicable.

Stress crack resistance: Not applicable.

Outer conductor integrity: +175°C ±5°C.

Cold bend: Not applicable.

Dimensional stability: +125°C ±5°C.

Core to jacket: .015 inch, maximum.

Contamination: Not applicable.

1/ Bendability: Mandrel diameter: .25 inch, maximum (except dash numbers - 00006 through -00011, mandrel diameter shall be .100 inch, maximum).

Flammability: Not applicable.

Weight: See table I.

Electrical:

Test frequency: 500 MHz to 20 GHz.

Spark test: Not applicable.

Voltage withstanding: 5,000 V rms.

Insulation resistance: Not applicable.

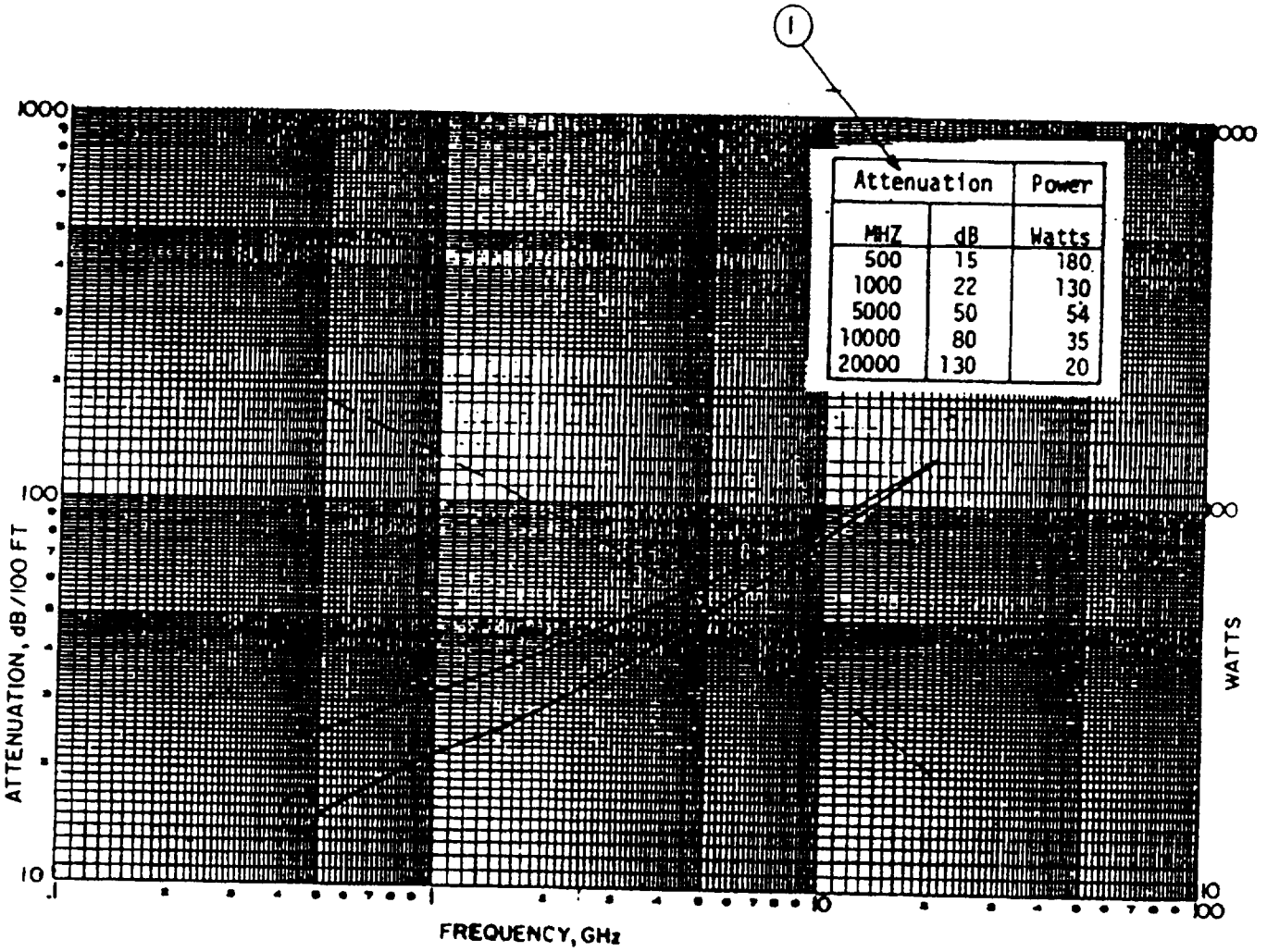
Corona extinction voltage: 1,500 V rms, minimum.

Characteristic impedance: 50.0 ±1.5 ohms.

Attenuation: See figure 2.

Structural return loss: See figure 3.

1/ Performance may degrade after being subjected to the mandrel test.



1 M17/133-RG405, -00001, -00002, -00003, -00006 through -00009.
2 M17/133-00004, -00003, -00005, -00010, -00011.

Discrete characteristic:

f (GHz)	dB/100 ft.
.5	25
1	34
5	65
10	90
20	130

FIGURE 2. Power rating and attenuation.

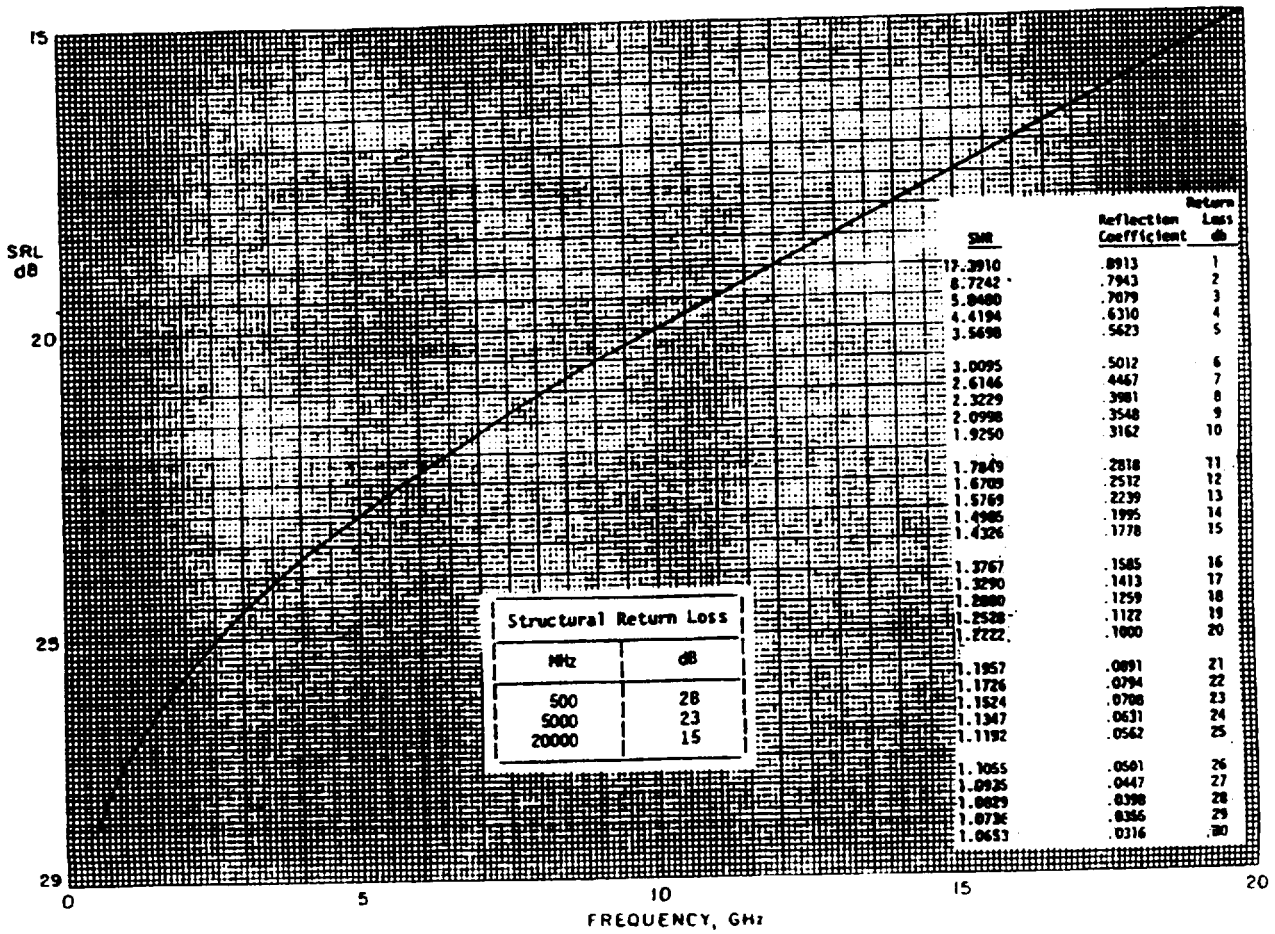


FIGURE 3. Minimum structural return loss cable.

Capacitance: 32 pF per foot, maximum.

Capacitance stability: Not applicable.

Capacitance unbalance: Not applicable.

Transmission unbalance: Not applicable.

Phase stability: Not applicable.

Mechanically induced noise voltage: Not applicable.

Time delay: Not applicable.

Part number: See table II.

Supersession data: See table II.

TABLE II. Cross-reference of part number.

Part number	Superseded part number or type designation
M17/133-RG405	RG-405/U
M17/133-00001	---
M17/133-00002	---
M17/133-00003	---
M17/133-00004	---
M17/133-00005	---
M17/133-00006	---
M17/133-00007	---
M17/133-00008	---
M17/133-00009	---
M17/133-00010	---
M17/133-00011	---

NOTE: Revision letters are not used to denote changes due to the extensiveness of the changes.

CONCLUDING MATERIAL

Custodians:
Army - CR
Navy - EC
Air Force - 85

Review activities:
Army - MI
Air Force - 17, 99
DLA - ES, IS

User activities:
Army - AR, AT, ME
Navy - AS, MC, OS
Air Force - 19

Preparing activity:
Army - CR

Agent:
DLA - ES

(Project 6145-1159-03)